The influence of mechanical alloying on the structural and magnetic properties of $SmNi_5$

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We have investigated the influence of mechanical alloying on structural changes and magnetic properties of the $SmNi_5$ compound. The decrease of intensity and broadening of the diffraction lines have been detected after milling as a consequence of the grain's size reduction, and amorphisation of the samples. This compound crystallizes in the hexagonal structure of $CaCu_5$, is ferromagnetic with the Curie temperature of 30 K and the saturation magnetic moment of $0.7\mu_B$ at 4.2 K. From our magnetic measurement results, we revealed that difference in a magnetization at 2 K between FC and ZFC is a characteristic behavior for cluster glasses. We suggest that the cluster glass is controling mechanizm in the mechanical alloyed powder.

9.7 cm

13.4 cm

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